Electronic Version
Stylesheet Version v1.1.1

SYSTEM AND METHOD FOR INTEGRATING A DIGITAL CORE WITH A SWITCH MODE POWER SUPPLY

Abstract

A digital core embodied within a semiconductor die is situated within any of a variety of integrated circuit packaging technologies including but not limited to Ball Grid Array or Quad Flat Pack surface mount technology. Said semiconductor die is of the variety that requires plural separate power supply voltage domains such as a digital core supply of differing voltage than the input/output pad ring supply voltage. Within the integrated circuit package including said semiconductor die also exists a high efficiency DC-to-DC voltage converter of type commonly known as a chopper or a switch mode power supply. In the preferred embodiment this switch mode power supply would be of the highest efficiency, a synchronous step-down regulator, thus to enable powering the entire integrated circuit from one supply voltage. The components contained within the integrated circuit package along with the semiconductor die include the majority if not the totality of the components comprising the switch mode power supply, which

could include the power switching transistors; an inductor core and windings; the output voltage fixing circuitry; the output capacitor; and the substrate for mounting said components when integrated within a packaging technology that does not already include a substrate such as within the periphery of a lead frame for leaded devices.